

**REMARKS**

**I. STATUS OF CLAIMS**

Contrary to the identification of claims in the Final Office Action, only claims 55-60 and 62-107 are currently pending. Applicants previously canceled claims 61 and 108. No claims are amended herein.

**II. REJECTION UNDER 35 U.S.C. § 103**

The Examiner has maintained the rejection of the pending claims under 35 U.S.C. § 103(a) as unpatentable over Varughese et al., *Chemical Attraction Between Expoxidized Natural Rubber and Silica: Studies on Cure Characteristics and Low Temperature Dynamic Mechanical Properties* ("Varughese"), or over Japanese Patent Abstract 07-090123 ("JP 07-090123") for the reasons disclosed in page 2 of the Final Office action. Since the Examiner has addressed only one of four limitations argued in the previous response, Applicants respectfully traverse this rejection for at least the reasons of record and for the additional reasons presented below.

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, the Examiner bears the burden of establishing each of three requirements. First, the references must teach or suggest each and every element and limitation recited in the claims. See M.P.E.P. § 2143.03. Second, the Examiner must establish that some suggestion or motivation exists, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the references to achieve the presently claimed invention. See M.P.E.P. § 2143.01. Third, the Examiner must establish a reasonable expectation of success for the proposed combination. See M.P.E.P. § 2143.02. Each of these requirements must "be found in

the prior art, and not be based on applicant's disclosure." M.P.E.P. § 2143. Moreover, deficiencies in the references cannot be cured by appealing to "common sense" and "basic knowledge" without any evidentiary support. *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001).

At a minimum, the Examiner cannot establish (1) that the cited references teach or suggest each and every element recited in the claims and (2) that some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, existed to modify the references to achieve the presently claimed invention. See M.P.E.P. §§ 2143.01 & 2143.03.

**A. INDEPENDENT CLAIMS 55, 62, AND, 107**

**1. Varughese**

Applicants have established that Varughese fails to expressly teach or suggest, at a minimum, the claim limitation wherein the "crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C," which is found in independent Claims 55, 62, and 107. In response, the Examiner has asserted that "[t]his is a property limitation and is presumed to be either anticipated or rendered obvious by compositions having the claimed compositional ingredients in the same amounts." Final Office Action at 2. Applicants respectfully disagree, because (1) the Examiner has not shown that these prerequisites have been met, and/or (2) the property limitation is a function of other parameters that are not present.

Whether or not Varughese discloses (and Applicants have not conceded that it does) a raw tyre that "comprises at least one crosslinkable elastomeric material

comprising an elastomeric polymer containing epoxide groups and an active filler containing hydroxyl groups dispersed in the elastomeric polymer,” Applicants submit that this is not enough to inherently disclose that “at least one crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C.”

First, the effective degree of crosslinking is a function of not only amount of recited material, but time, temperature, and other materials. (See *e.g.*, Applicants’ specification at 22-23). Nothing in Varughese suggests that these factors are taken into account. Only under certain conditions may it that happen. Thus, cross-linking cannot be deemed to be inherently disclosed. M.P.E.P. § 2112 (discussing that inherency cannot be based on what would result if conditions were optimized).

Second, Varughese admits that it cannot meet this claim limitation with the recited materials. In fact Varughese teaches that its process produces products that have an unacceptably low degree of crosslinking. Specifically, Varughese discloses that generally, the interaction between its filler and polymer are not high enough to be detected through a rheometer torque rise. (Varughese, at 1848-49). Varughese’s discloses that chemical interaction under conventionally cured silica-filled vulcanizates is comparatively poor. (Varughese, at 1849). Even Applicants have determined that this evidences a poor degree of cross-linking. (See Applicants’ specification at 3-4).

This is also evidenced by a comparison of Applicants’ and Varughese’s data. Specifically, according to Varughese in Figure 1, the torque increase is only 5 dN.m after 1 full hour at 180°C. In contrast, Applicants’ Example 5 shows a near 15 dN.m

increase after only 30 minutes at 170°C. Thus, one of ordinary skill in the art would recognize Varughese as disclosing inadequate cross-linking.

Further, based upon the data provided by Varughese in Figure 1, the effective degree of crosslinking after 5 minutes of D is estimated at 6%, of F is estimated at 20%, of H is estimated at 0% (no crosslinking), of I is estimated at 10%. These are well below the claim limitation of “at least one crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C.” In fact, Varughese’s values would be even lower if the data had been collected at 170°C, rather than 180°C.

Third, the fact that Varughese cannot meet this limitation is further supported by Applicants’ own testing. As shown by Comparative Examples 13 and 14 of Applicants’ Table 4, the mere combination of the claimed elements does not inherently yield a composition with the required degree of cross-linking. Inherency cannot be based on the mere possibility that under some condition the desired characteristic will be found. M.P.E.P. § 2112.

In view of the deficiencies of Varughese, the Examiner has not and cannot meet this requirement for a case of prima facie obviousness. See M.P.E.P. §2143.03. Accordingly, the Examiner must establish some motivation to modify the teachings of this reference, since “[t]he fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish a prima facie case of obviousness.” M.P.E.P. § 2143. In other words, the mere fact that Varughese could be modified to meet the degree of crosslinking limitation does not make the modification obvious, unless the Examiner-cited references suggest the desirability of such

polymeric material configurations. See *In re Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989).

In the present case, Varughese does not suggest the desirability of obtaining a “crosslinkable elastomeric material [that] has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C”. Rather, as previously noted, Varughese discloses that chemical interaction under conventionally cured silica-filled vulcanizates is comparatively poor. Accordingly, the requisite motivation to modify is lacking and, thus, the rejection is improper. See M.P.E.P. §2143.01.

## **2. JP 07-090123**

Similarly, JP 07-090123 fails to teach or suggest, at a minimum, the claim limitation of (1) “crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C” and (2) “wherein the crosslinking step is carried out essentially without additional crosslinking agents,” found in Claims 55, 62, and 107.

First, as shown by Varughese and Comparative Examples 13 and 14 of Applicants’ Table 4, the mere combination of the claimed elements does not inherently yield a composition with the required degree of cross-linking. Therefore, JP 07-090123, which merely discloses materials, cannot be deemed to disclose “crosslinking equal to at least 65%” and does not provide direction to a person of ordinary skill in the art to achieve it.

Second, the Examiner has not address the fact that the compositions disclosed in JP 07-090123 are cured with conventional sulfur-based vulcanizing systems. (JP 07-090123, ll. 21-29, p. 10; and Table 1, pp. 7-8). JP 07-090123 discloses that the sulfur

content is preferably no less than 1.2 parts by weight, and more preferably from 1.5 to 3.0 parts by weight, per 100 parts by weight of rubber component. (JP 07-090123, II. 28-29, p. 10). As indicated in Table 1, page 7, the base composition of JP 07-090123 includes 0.7 phr curing promoter and 1.7 phr sulfur. (JP 07-090123, Table 1, pp. 7-8). This is expressly contrary to the claim requirement that the "crosslinking step is carried out essentially without additional crosslinking agents." (See specification at 7-8). In view of the deficiencies of JP 07-090123, the Examiner has not met this requirement for a case of prima facie obviousness. See M.P.E.P. § 2143.03.

Accordingly, the Examiner must establish some motivation to modify the teachings of this references, since "[t]he fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish a prima facie case of obviousness." M.P.E.P. § 2143. In other words, the mere fact that JP 07-090123 could be modified to meet the degree of crosslinking limitation or the without additional crosslinking agents limitation does not make the modification obvious, unless the Examiner-cited references suggest the desirability of such polymeric material configurations. See *In re Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989). In the present case JP 07-090123 does not suggest the desirability of either modification. Rather, JP 07-090123 does not appreciate the one property and expressly requires the other limitation to be violated, and therefore cannot provide any motivation to modify.

Accordingly, for these reasons, claims 55, 62, and 107 and all claims that depend therefrom are patentable over the cited prior art.

**B. INDEPENDENT CLAIMS 93, 102, AND, 103**

Applicants submit that neither Varughese nor JP 07-09123 teach or suggest, at a minimum, the claim limitation of obtaining “a degree of dispersion of the active filler greater than 90%, . . . at a predetermined temperature, to avoid pre-crosslinking of the elastomeric composition,” as found in independent Claim 93, and the claim limitation “wherein the active filler is dispersed in the elastomeric polymer . . . with a dispersion index greater than 90%,” as found in independent Claims 102 and 103. The Examiner has not addressed either of these limitation in the pending Office Action.

Again, neither reference recognizes this dispersion property and/or the need to avoid pre-crosslinking of the elastomeric composition. Moreover, neither is inherent to a disclosure of the combination of elastomer and filler. See for example, Comparative Example 9 from Applicants’ Table 3, which does not meet the dispersion requirement despite meeting the other limitations. Since the references do not recognize these limitations, they cannot be deemed to provide the necessary motivation to modify their teachings. See M.P.E.P. § 2143.01. Only Applicants’ specification provides that information, but that is not available to the Examiner to use to meet his burden with respect to an obviousness rejection. See M.P.E.P. § 2145.X.A

Accordingly, Applicants submit that the Examiner has failed to satisfy the burden of establishing a *prima facie* case of obviousness with respect to independent Claims 93, 102, and 103 of the presently claimed invention, and respectfully request that all § 103 rejections be withdrawn.

Since it is imperative that claims 55-60, 63-92, 94-101, and 104-106 be read in light of independent Claims 55, 62, 93, 102, 103, and 107 that they respectively depend

from, Applicants respectfully submit that neither Varughese, nor JP 07-090123 teach or suggest all the present claim limitations found in the presently rejected claims. Thus, Applicants respectfully submit that these rejections are improper and respectfully request that they be withdrawn.

**III. CONCLUSION**


In view of the foregoing remarks, Applicants submit that this claimed invention is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account no. 06-0916.

Respectfully submitted,

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Dated: September 16, 2004

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